

Tates Creek Middle School


Renovating to Become High Performance

March 23, 2011




**It's
about kids.**
FAYETTE COUNTY PUBLIC SCHOOLS

**SMG**

 **rosslarrant**
architects

01

The Holistic Approach

Why a High Performance Renovation?

Why Pursue High Performance/Sustainable Schools?

Utility Rates Are Increasing

PSC Grants Revenue Adjustments to LG&E and KU

East Kentucky Power rate increase approved-1/15/11

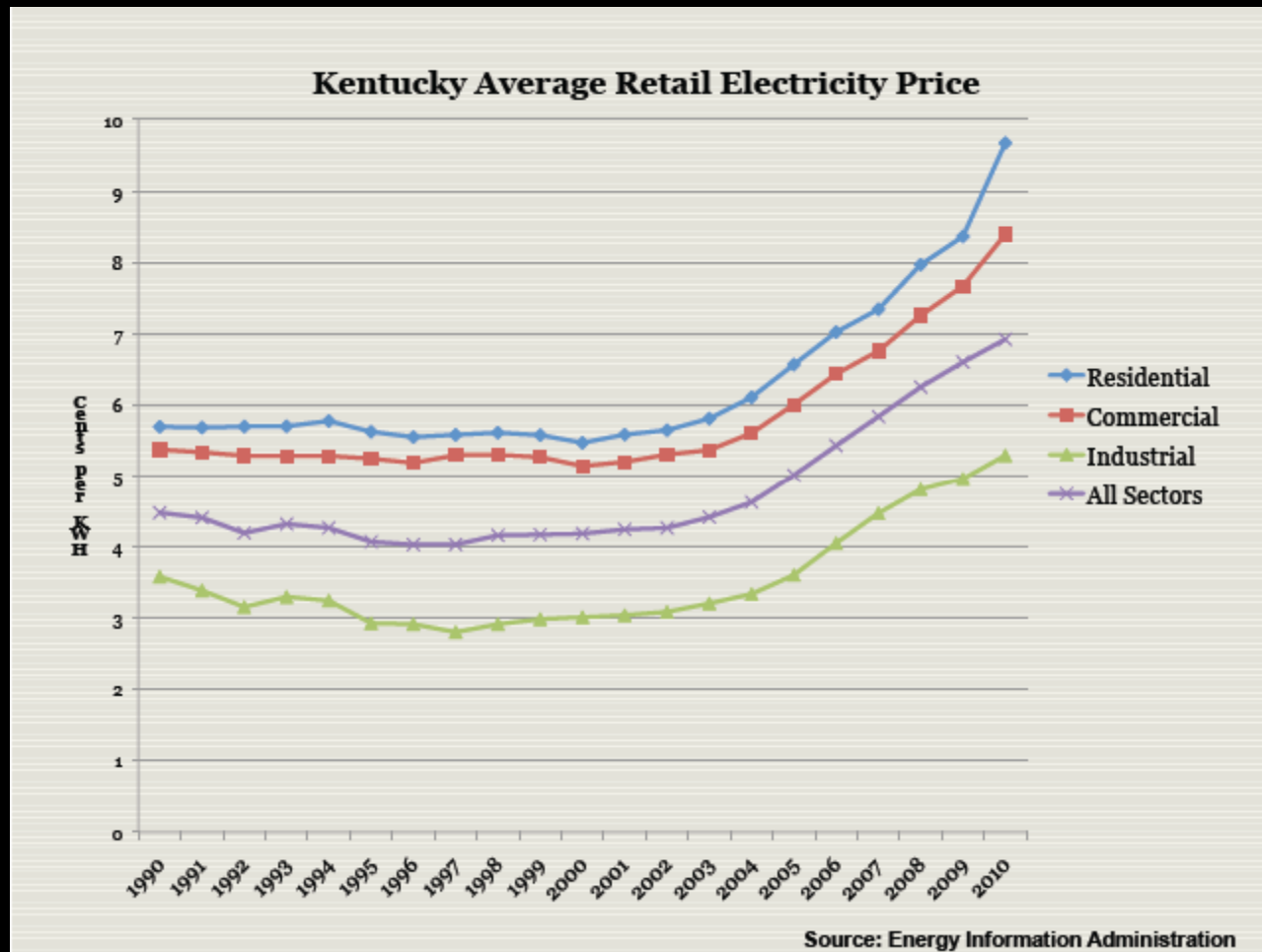
Electric rates could rise for Western Kentucky residents-3/2011

**Coal price hikes boost electric rates, more pain coming
4/28/2008 USA Today**

**Many Industries Hit With 30% Increase In Electricity Rates In
18 Months 7/2010**

**Kentucky Public Service Commission Approves \$187 million
per year rate hike for E.ON US 7/2010**

Why Pursue High Performance/Sustainable Schools?



Why Pursue High Performance/Sustainable Schools?

Fayette County School Buildings Were Underperforming

- FCPS Developed Energy Baseline In 2010. 2005-2008
- Average School In This Region Currently Uses 72 Kbtu/Sq.Ft.
- The Average FCPS Was Using 83.6 Kbtu/Sq.Ft.
- This Information Was Used To Identify Target Schools

Lessons Learned

It's Important To Really Look At Utility Bills

- Wrong Rates
- Incorrect Type of Service (All Electric vs. Regular Rate)
- Residential Rate vs. School Rate

Look At Your Building Envelope And Mechanical Systems

Get Involved With Public Service Commission Proceedings

Don't Try To Change Everything At One Time

Get Key Stakeholders Involved Early and Often

Student Involvement Is Very Important

FCPS Model

- Program Goals
 - Strive To Be Toxins Free.
 - Utilize Our Natural Resources Responsibly.
 - Create Green and Healthy Spaces Inside and Around Our Schools
 - Fayette County Will Be a National Leader In Environmental Education

Program Implementation

Retained Energy Consulting Team-Environmental, Engineering, Architectural and Building System Backgrounds

- Performed Initial Study
- Organized The Overall Program
- Address Specific High Level Issues/Questions

Hired Two Energy Managers Through Grant from Energy and Environment Cabinet and the Kentucky School Board Association

- Developed Sustainable Curriculum
- Obtain Sustainability Grants From State & Local Government
- Developed Sustainability Initiatives
- Developed Sustainable Website For School System
- Track Energy Usage and Information For Energy Rebates

Program Implementation

Formed Sustainability Council

- Developed A Sustainability Plan For School System
- The Plan Has Measurable Goals, Objectives, Assigned Responsibilities And Completion Dates.
- The Council Will Be Responsible For The Implementation Of The Plan

Energy Assessments

- Started With Two Pilot Schools-One High School & One Elementary School
- Eight High Energy Schools Were Also Assessed.
- Twelve Additional Assessments Were Conducted By KEEPs & Kentucky Utilities.

Current Initiatives

- Moderate and Advise Sustainability Council
- Implement Sustainability Plan Goals
- Monitor Strategies To Insure Goals Are Being Met
- Provide Direct Support To Energy Managers From Consulting Group
- Review and Update Building Component Requirements
- Develop Natural Gas Purchase Strategy

Immediate Savings - 9 Months

- Avoided Costs Rate Intervention Public Service Commission
\$200,000
- New Gas Contract.
\$300,000
- Net Zero School Service Hookup & Interconnection
\$100,000
- Rate Change To Appropriate All-Electric School Rate (Billing Error)
\$100,000

02

Design Strategies

Designing a High Performance Renovation

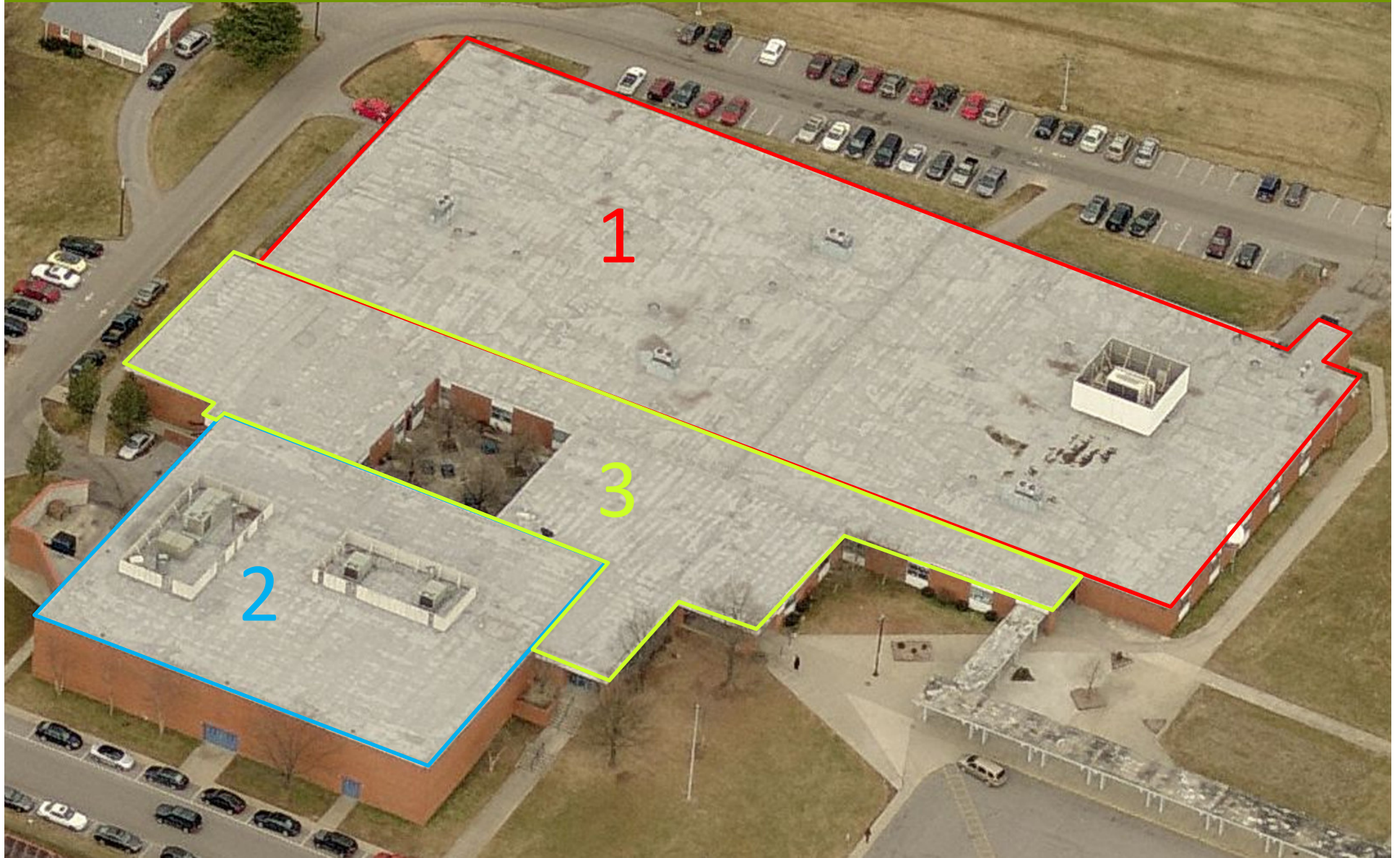
Renovation vs. Building New

Sustainability & Cost

- Assess needs
 - media center
 - administrative
 - instruction space
 - circulation
 - site
 - systems
 - accessibility
- Determine feasibility
 - cost
 - phasing
 - age
 - KDE categorization



Project History



Programming Drivers

- Budget
- Priorities
 - Life safety
 - Building integrity
 - MEP Performance
 - Design aesthetics
- Life cycle analysis
 - High performance features



Green & Healthy

- RTA firm philosophy
- Kentucky Green & Healthy Schools guideline



Sustainable Features

- Orientation



Sustainable Features

- Daylighting



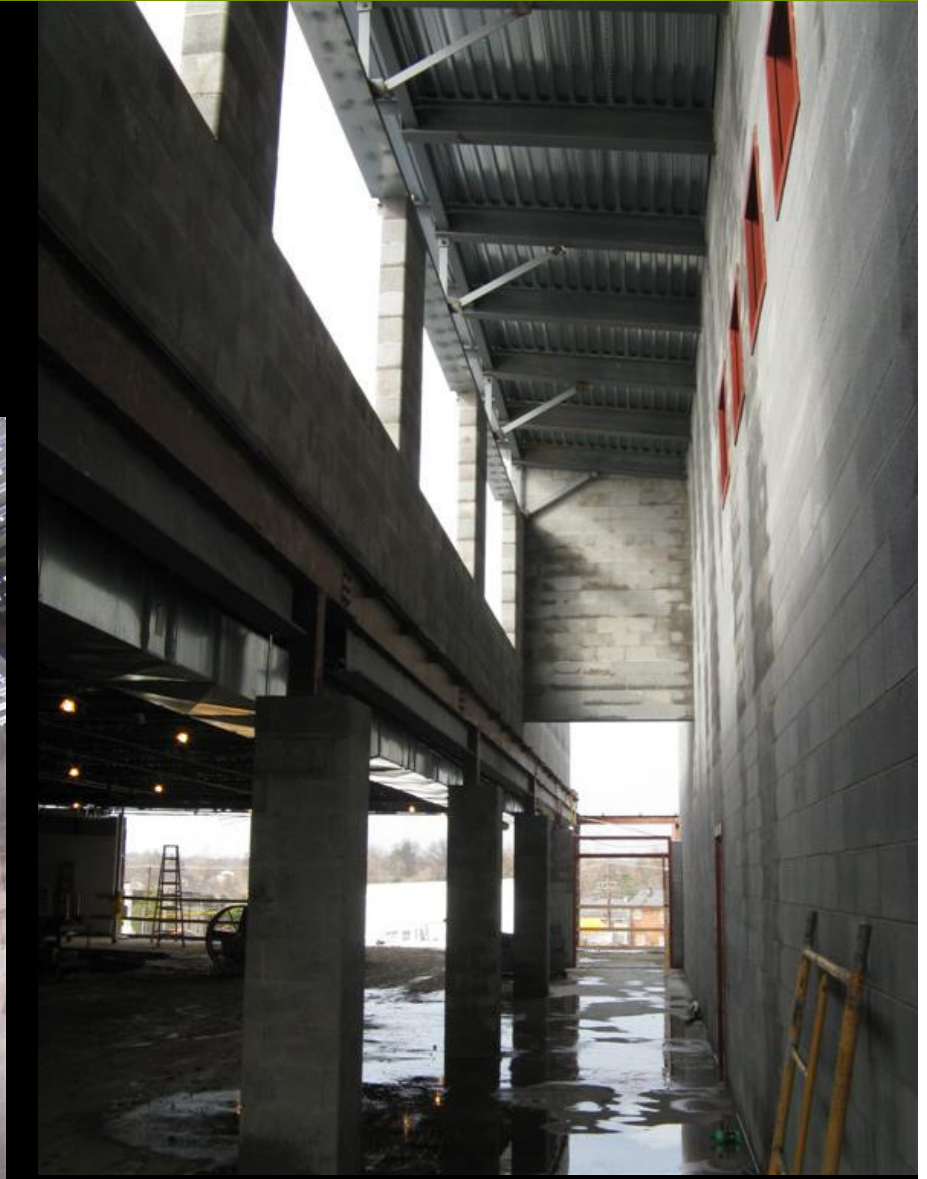
Sustainable Features

- Envelope
 - walls



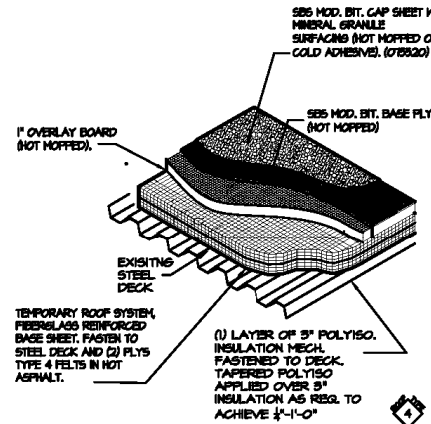
Sustainable Features

- Envelope
 - windows

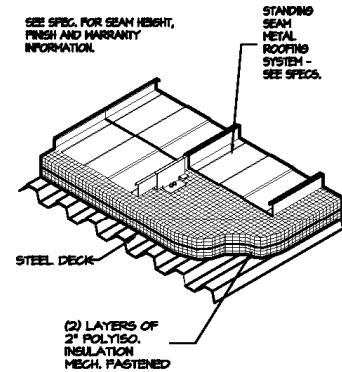


Sustainable Features

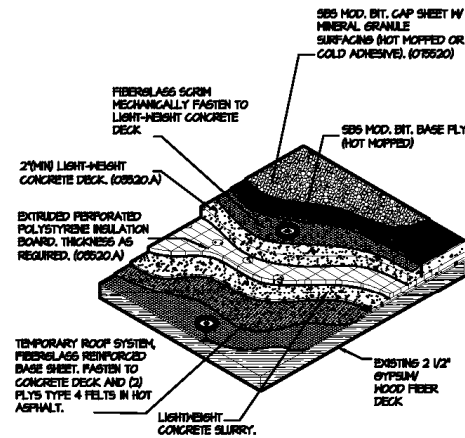
- Envelope
 - roof



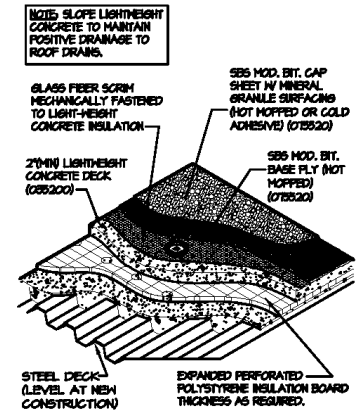
ROOF SYSTEM DETAIL TYPE 4
SCALE : NOT TO SCALE



ROOF SYSTEM DETAIL TYPE 2
SCALE : NOT TO SCALE



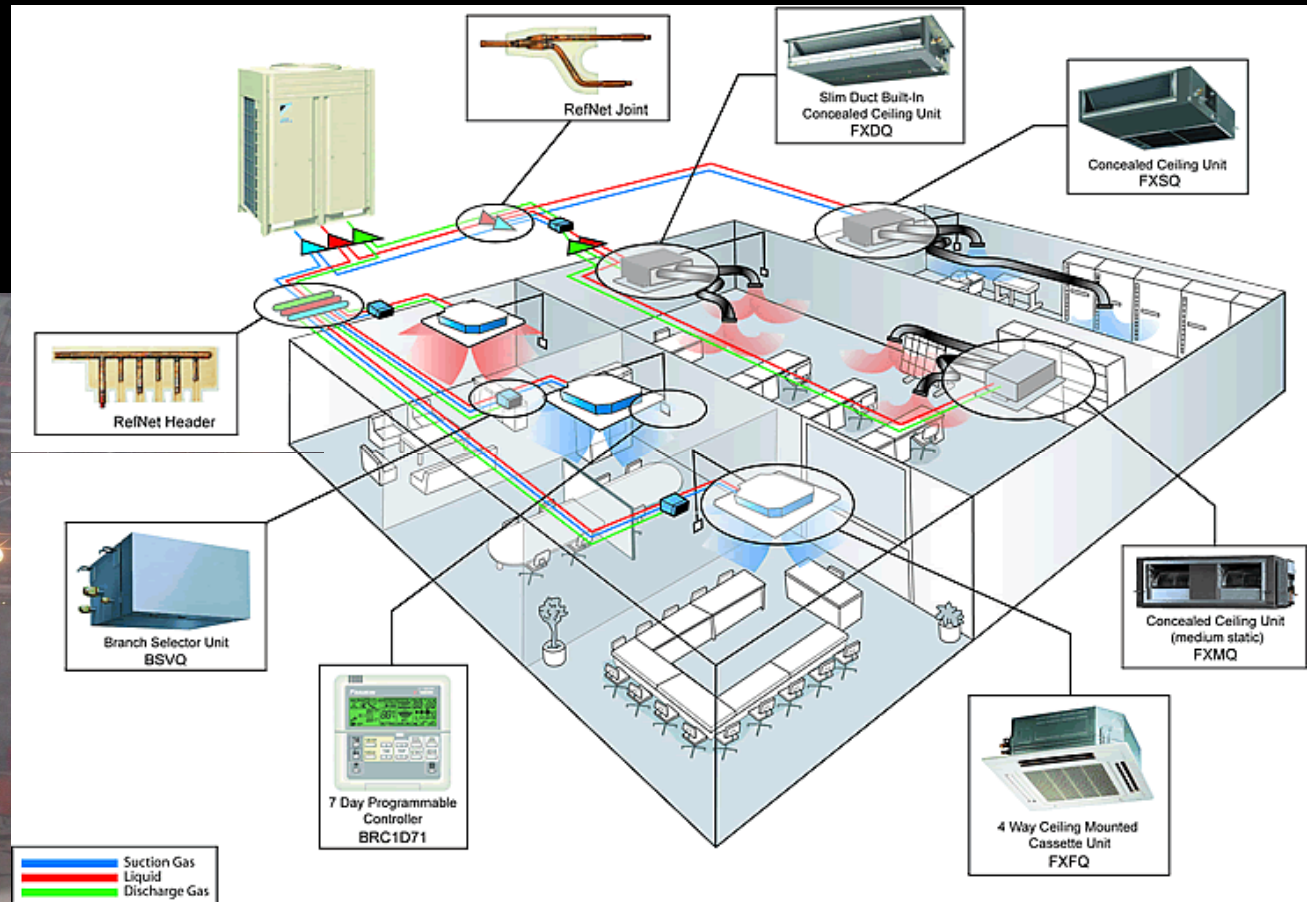
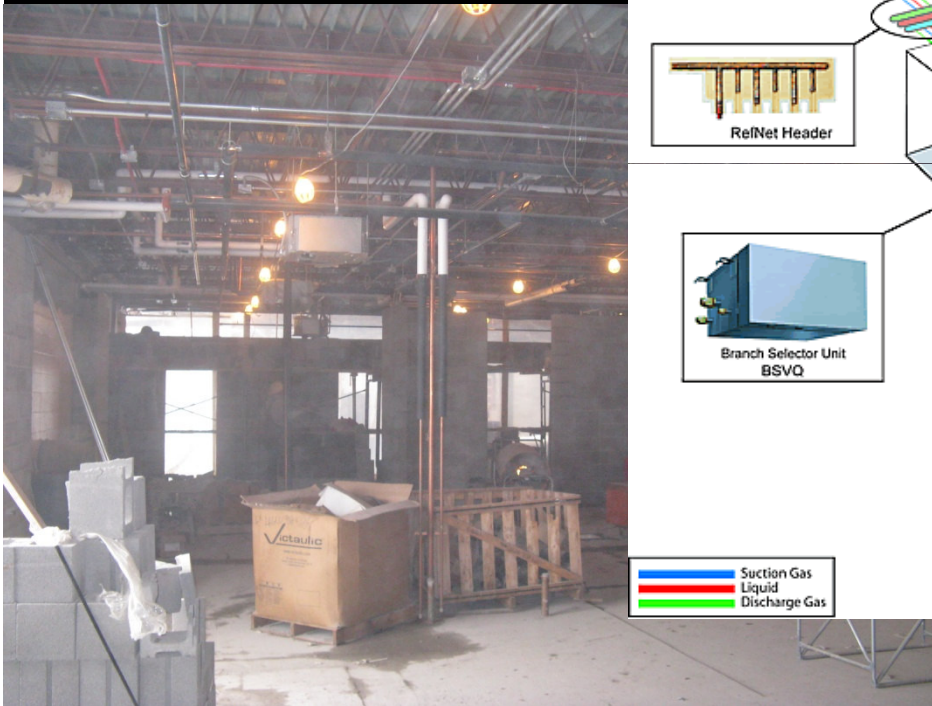
ROOF SYSTEM DETAIL TYPE 3
SCALE : NOT TO SCALE



ROOF SYSTEM DETAIL TYPE 1
SCALE : NOT TO SCALE

Sustainable Features

- Systems

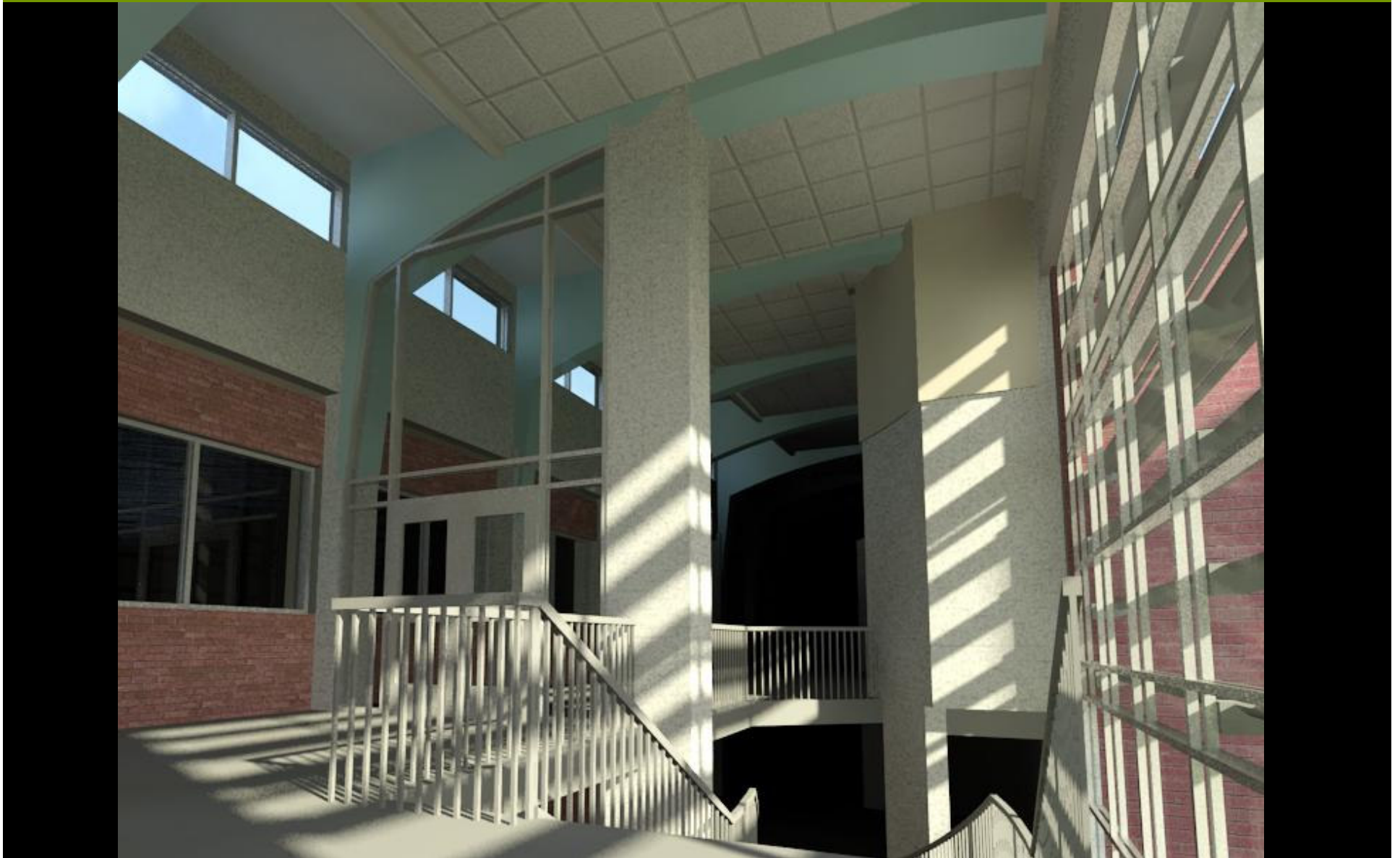


Sustainable Features

- Site



High Performance Renovation



High Performance Renovation

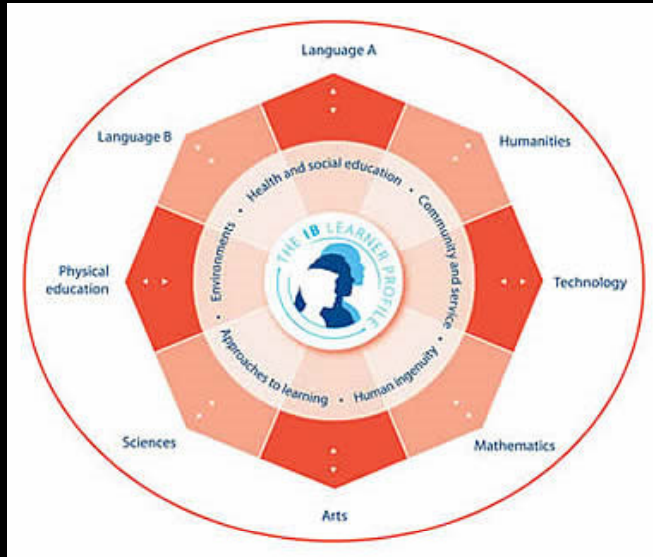


03

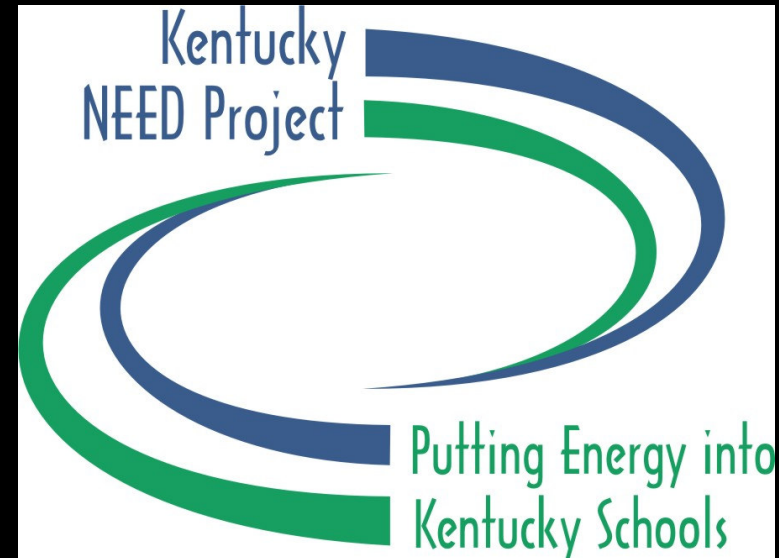
Curriculum

Getting Students Involved

TCMS as a Living Lab



International Baccalaureate



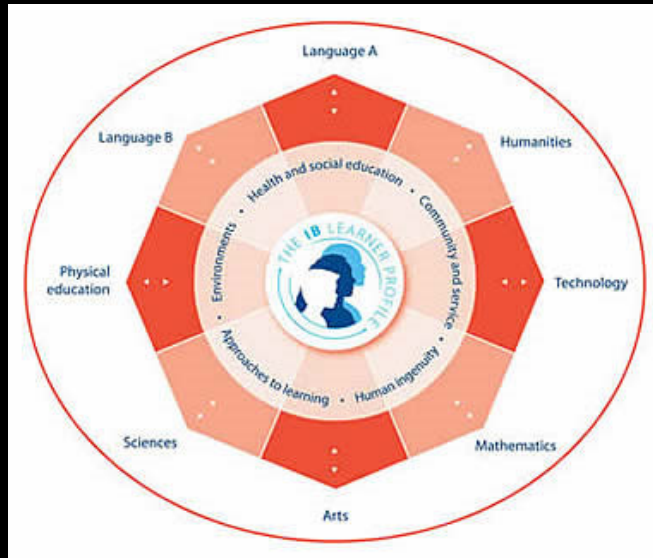
KY NEED



Fayette County Public Schools

E=USE²

International Baccalaureate



Academic challenge that encourages students to embrace and understand the connections between traditional subjects and the real world, and become critical and reflective thinkers.

Real world learning

Holistic education

Meaningful, relevant learning

Energy Houses & Progress Tours



KY NEED



Mission: to promote an energy conscious and educated society by creating effective networks of students, educators and community leaders to design multi-sided energy education programs.

Cross disciplinary, constructivist curricula

KY NEED Youth Awards for Energy Achievement

Relevant, engaging professional development

www.need.org/states/kentucky



Energy Carnival



Energy Bucks and Pickle Battery

Eco Challenge



Challenge for teens across the nation to make a difference in environmental health of our planet

Land/Water

✓ **Air/Climate**

Final Challenge



www.scholastic.com/lexus



Eco Club takes their message on the road



Wins \$10,000



E=USE²



FCPS is dedicated to sustainability and energy efficiency to protect our environment, preserve our natural resources and encourage responsible spending of our community's tax dollars. E=USE² is designed to empower our students to assess energy use in their school, raise awareness, design & implement school improvement projects and promote sustainable and energy efficient habits.

E=USE² In Action



- Step 1:** Form a Team
- Step 2:** Energy Assessment
- Step 3:** Raise Awareness
- Step 4:** Project Design
- Step 5:** Project Implementation
- Step 6:** Documentation
- Step 7:** Recognition
- Step 8:** Celebration



www.Sustainability.fcps.net



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